SMALL NAVIGATION PROJECT

HAMPTON HARBOR

NEW HAMPSHIRE

DETAILED PROJECT REPORT

(ADVANCE DRAFT)

U.S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS WALTHAM, MASS.

JULY 1963

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U. S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM 54, MASS.

ADDRESS REPLY TO:
DIVISION ENGINEER

REFER TO FILE NO.
NEDGW

30 July 1963

SUBJECT: Detailed Project Report, Hampton Harbor, New Hampshire

TO: Chief of Engineers
ATTN: ENGCW-PD
Washington 25, D. C.

1. The advance draft of the subject report is resubmitted herewith for review and comment. The report, first submitted in November 1962, was prepared in accordance with EM 1165-2-107. It has been reconsidered and revised in accordance with comments contained in 1st Indorsement from the Chief of Engineers, dated 31 January 1963 to New England Division letter, subject: "Detailed Project Report, Hampton Harbor, New Hampshire", dated 9 November 1962.

2. A report of the U. S. Fish and Wildlife Service concerning benefits expected to accrue to recreational interests as a result of sport fishing from the proposed jetties, has been included in Appendix A, pages A-7 and A-8.

3. Additional information relative to local action on meeting the requirements of local cooperation, which was obtained subsequent to the first submission of the advance draft, has been included in Appendix B. (See pages B-1, B-2, and B-7).

4. Because of the type and extent of the revisions required, the report has been completely reprinted.

5. Formal comments of the State of New Hampshire will be requested after approval of the advance draft.

1 Incl u/s/c
Detailed Project
Report (10 cys)

P. C. HYZER
Brigadier General, USA
Division Engineer

ENGCW-PD (9 Nov 62) 1st Ind
SUBJECT: Detailed Project Report, Hampton Harbor, New Hampshire

Office, Chief of Engineers, Washington 25, D. C., 31 January 1963

TO: Division Engineer, U. S. Army Engineer Division, New England
WALTHAM, MASSACHUSETTS

1. Review comments are provided in the following paragraphs. It is requested that further consideration be given to the points raised by these comments and revisions made as appropriate. Subject to such consideration and revision the proposed report is satisfactory.

2. Reference paragraph 63 regarding placement of dredged spoil material. It is suggested that consideration be given to placing suitable spoil from the dredging of the outer bar on the authorized beach erosion control project north of the harbor.

3. The north jetty is not intended to be a sand-impounding structure (par. 57), except that the 200-foot spur is said to be needed to retain a beach on the ocean side of the jetty and to prevent undercutting of the end of the structure by flood currents (see par. 58). The need of the spur for those purposes is not established. Some accretion along the north side of the jetty is likely even without the spur and damage of the jetty end by flood currents can be prevented by placement of an adequate filter blanket beyond the toe of the structure. However, due to the alignment of the north jetty it appears advisable to retain the spur to provide beach that would reduce wave force acting on the structure.

4. The report should state why the south jetty improvement would require a crest elevation of 16 feet mlw, while the north jetty requires only 12 feet mlw.

5. It is believed that the raising of part of the south jetty and construction of a spur from that jetty to shore can be expected to reduce losses of sand into the inlet during reversals in direction of littoral drift, and thus to cause minor accretion to Seabrook Beach for a short distance south of jetty. In a report on Salisbury Beach, Massachusetts (located immediately south of Seabrook Beach), the Beach Erosion Board indicated that in case navigation improvements are constructed at Hampton Harbor entrance, provision should be made for continuation of a supply of beach material to Seabrook and Salisbury Beaches. As the north jetty extension is relatively short (ending approximately at the MLW line) its effect in reducing supply to beaches south of the inlet is not expected to be important, as its impoundment capacity should be exhausted relatively soon after construction. However, it would be desirable to observe Seabrook Beach to determine whether reduction in supply is causing recession of the shore or deepening of the nearshore bottom so that the necessary supply can be provided before damaging shore recession occurs. Local interests should be required to provide such nourishment as may be needed to offset a possible reduction in supply because of the inlet improvement.

6. A requirement given for local interests (par. 90d) is maintenance of at least 22 acres of anchorage and access channels 6 feet deep in the harbor without cost to the United States because it is expected that these areas will be dredged to obtain nourishment material for the authorized beach erosion control project at Hampton Beach with or without the navigation improvement. However, the 1962 River & Harbor Act authorized modification of the Hampton Beach project to provide for Federal participation in the cost of nourishment of Hampton Beach for a period of 10 years. Thus the requirement of maintenance without cost to the United States appears inconsistent with the authorized Federal contribution toward the cost of obtaining beach material for nourishing Hampton Beach. The requirement could be reworded to except the Federal share of costs involved in procuring sand for nourishment of Hampton Beach in accordance with the authorized project therefor.

7. With the prospect of such a small return to the commercial fishery, it appears questionable that additional lobster boats would be attracted to Hampton Harbor, if improved. The total annual benefits to the lobster fishery, estimated at $4,600, do not appear sufficient to attract 2 new full-time, 2 transfer full-time, and 1 new part-time boats, particularly when considering that the $4,600 would have to be shared with the existing fleet. It is believed that the $2,200 benefit claimed in paragraphs 73 and 74 is not properly creditable to the project. The assumption that the real value of lobsters will increase and thus encourage fishing beyond present limits may or may not be correct. However, improvement of Hampton Harbor would have no relation to such additional catch.

8. It is not clear from paragraph 70 whether consideration has been given to the present catch of the 2 transferred boats. The only creditable benefit would be the incremental catch.

9. Application of the same cost of operation to existing and new boats does not appear appropriate. The additional catch by existing boats, made possible by the elimination of tidal delay, would be an expansion of an existing operation. These fishermen would be extending their productive time in existing vessels; the only additional costs would be operating costs. These items include fuel and possibly extra traps, line, and bait. The new boats, which apparently would not enter the fishery without the improvement, would involve full annual costs including return on investment, depreciation, and boat and gear maintenance. Also, the 50- and 60-percent operating cost apparently does not include an allowance for the fisherman's labor.

10. With reduced benefits to commercial fishing, project justification appears marginal unless there are other benefits which have not been discussed, such as beach erosion or recreation fishing from jetties.

ENGCW-PD (9 Nov 62) 1st Ind 31 January 1963
SUBJECT: Detailed Project Report, Hampton Harbor, New Hampshire

11. If the 3 new recreational boats do not appear within the first few years after project completion, their benefits should be discounted to present worth, using an interest rate of 2-7/8 percent as currently prescribed.

12. It is suggested that the requirements of local cooperation include a provision for maintenance by local interests of the existing jetties.

13. It is noted that assurances have not been obtained from local interests with respect to assuming all costs over the $200,000 Federal limit (App. E-1, paragraph 3). Such assurances should be obtained prior to approval of the project, if the favorable recommendation is retained after f further study.

14. Non-Federal annual project costs may be computed using an interest rate of 2-7/8%, the same as Federal costs.

FOR THE CHIEF OF ENGINEERS:

LOCKWOOD/cs
Ext 55207

Incl
3 cys w/d

ROBERT C. MARSHALL
Colonel, Corps of Engineers
Assistant Director of Civil Works
for Eastern Divisions

CC: Project File w/d
Mr. Lockwood w/d
Beach Erosion Bd (Attn: Mr. Rayner)
R & H Board
Engineering Div. (Attn: Mr. Lee)
Comeback Copy - Room 2330

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Maps Accompanying Report:

U. S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS
424 Trapelo Road
Waltham, Mass.

NEDED-R

30 July 1963

DETAILED PROJECT REPORT
HAMPTON HARBOR, NEW HAMPSHIRE

PERTINENT DATA

1. Purpose. - Improvement of the entrance channel to eliminate tidal delays and permit increased harbor use.

2. Location. - On the New Hampshire seacoast 13 miles south of Portsmouth Harbor and 5 miles north of the mouth of the Merrimack River at Newburyport, Massachusetts.

3. Existing Project. - There is no Federal navigation project at Hampton Harbor. There is a Beach Erosion Control Project at adjacent Hampton Beach.

4. Improvement Desired. - Dredging to provide a 10-foot deep entrance channel, with inner harbor channel and anchorage areas, and extending the existing entrance jetties to protect the harbor and entrance.

5. Recommended Improvement. - Extending the north jetty 1,000 feet with a 200-foot spur at the tip, raising the outer 300 feet of the south jetty and constructing a 180-foot spur to high ground, and then dredging to provide a channel 8 feet deep and 150 feet wide across the entrance bar.

6. Estimated Costs.

	July 1963
Jetties: 32,000 tons of stone @ $6.50	$ 208,000
8-foot Channel: 30,000 c.y. @ $1.50	45,000
Contingencies @ 15%	37,000
Engineering and design	10,000
Supervision and administration	25,000
Construction total (July 1963)	$ 325,000

Other Costs:

Additional Navigation Aids (Coast Guard)	$ 1,000
TOTAL Federal and Required Non-Federal Costs	$326,000

7. Apportionment of First Cost:

Federal:

Corps of Engineers: 59% of $325,000	$192,000
Coast Guard: Additional Navigation Aids	1,000
TOTAL Federal	$193,000

Non-Federal:

Cash Contribution: 41% of $325,000	$133,000

8. Annual Costs:

Federal:	Interest and Amortization (50 yrs. at 2.875%). (.03795 x $193,000)	$ 7,300
	Maintenance: Jetties	1,100
	Channel	900
	Navigation Aids	200
		$ 9,500
Non-Federal:	Interest and Amortization (50 yrs. at 2.875%). (.03795) x $133,000)	5,000
TOTAL		$ 14,500

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9. Benefits

	Local	General	Total
Increased Fish Catch		$ 3,000	$ 3,000
Increased Recreational Boating	$6,550	6,550	13,100
	$6,550	$ 9,550	$16,100
	41%	59%	100%

10. Benefit-Cost Ratio: $16,100/14,500 = 1.1
$40,100/14,500 = 2.7*

* Based on project effect on navigation including benefits of $24,000 a year to sport fishing from the jetties.

11. Requirements of Local Cooperation:

a. Make cash contribution of 41 percent of construction cost, and assume all costs in excess of $200,000 Corps of Engineers limitation.

b. Furnish lands, easements, and rights-of-way including suitably diked spoil areas needed for construction and maintenance of the project.

c. Hold and save the United States free from damages which may result from construction and maintenance of the project.

d. Maintain, without cost to the United States two public landings with adequate access channels and berths 6 feet deep, open to all on equal terms.

e. Maintain at least 22 acres of anchorage and access channels 6 feet deep in the harbor, extending from the Route 1A highway bridge. This maintenance to be without cost to the United States except for any Federal share of costs involved in procuring sand for nourishment of Hampton Beach in accordance with the authorized project therefor.

f. Provide such beach nourishment at Seabrook Beach as may be needed to offset a possible reduction in supply because of inlet improvement.

g. Maintain the existing State jetties at Hampton Inlet without cost to the United States.

AUTHORITY

12. This Detailed Project Report is submitted under general authority contained in Section 107 of the River and Harbor Act of 1960. Specific authority was provided by 1st Indorsement, dated 3 August 1962, from the Chief of Engineers in reply to a letter, dated 24 July 1962, from the Division Engineer, New England Division, subject: "Small Navigation Project, Hampton Harbor, New Hampshire".

PURPOSE AND EXTENT OF STUDY

13. The study was made to determine the engineering feasibility and economic justification of improving navigation conditions at the entrance and inside Hampton Harbor, and to determine the need for a Federal navigation project. A detailed hydrographic survey consisting of soundings and probings was made in order to determine the character and volume of materials to be dredged. Available maps, commercial statistics, and other data pertaining to the harbor were studied. A public hearing was held at Hampton Beach, New Hampshire on 29 November 1955 to enable local interests to present their views. Information presented at the hearing is discussed below under "Improvement Desired". Up-to-date information supplementing that presented at the public hearing has also been obtained. Data on the fish catch and use of Hampton Harbor by recreational craft were obtained during field visits. Local, State and other Federal agencies were consulted during the study and their views are included in this report.

DESCRIPTION OF NAVIGATION CONDITIONS

14. Hampton Harbor is in Rockingham County about 13 miles south of Portsmouth Harbor, New Hampshire and about 5 miles north of Newburyport Harbor, Massachusetts. The only other harbors nearby are Rye Harbor and Little Harbor, 8 and 12 miles north of Hampton Harbor. The harbor is at the mouth of the Hampton River, which flows southeastward through marsh areas.

15. Hampton Harbor is a shallow lagoon behind the barrier beach settlements of Hampton Beach and Seabrook Beach. The harbor is roughly rectangular, about 1.2 mile wide and 1½ miles long. Mud flats, bare at low tide, extend over much of the harbor and the natural channels are narrow and winding. Shallow branch channels extend from the inlet to the north up the Hampton River, to the west up Browns River and Mill Creek, and to the south up Blackwater River and to the Seabrook landing. These channels drain a tidal marsh area of about 8 square miles and a total area of about 50 square miles.

16. In 1955 the State of New Hampshire, in conjunction with a Federal beach erosion project for the restoration of Hampton Beach, dredged the channel to the Seabrook landing to 6 feet and dredged a channel and several anchorage areas north of the inlet to depths of 10 to 17 feet. Sounding surveys made in 1957 for this report show depths from 4 to 6 feet over 7 acres, 6 to 8 feet over 12 acres, 8 to 10 feet over 8 acres and greater than 10 feet over 18 acres. This amounts to a total of 45 acres which are over 4 feet deep and useful for channels and anchorage.

17. The harbor entrance was formerly a migrating inlet, shifting alternately to the north and to the south. Accompanying each northward migration, Seabrook Beach grew in the direction of migration and attached itself to White Rocks, and the south end of Hampton Beach eroded and receded northward. During each southward migration of the inlet, Hampton Beach grew in the direction of migration and, in turn, attached itself to White Rocks, while the north end of Seabrook Beach eroded and receded southward. An unprinted report by the Beach Erosion Board, dated 15 July 1932, stated that the erosion at the south end of Hampton Beach was serious and that there was urgent need for protection. The erosion resulted from the inlet migration and was attributed to tidal currents at the inlet. The Board recommended construction of 2 jetties and placement of sand fill to stabilize the inlet and reclaim land. A modification of the recommended work was done by the State of New Hampshire in 1934 and 1935.

18. The inlet had natural depths of up to 20 feet with a controlling depth of 5 feet over the entrance bar before the jetties were built. After the jetties were constructed the inlet depths increased slightly to a maximum of about 25 feet at the most constricted point and to about 6 feet over the entrance bar. An entrance channel was dredged by the State in the spring of 1956 to a controlling depth of 8 feet at mean low water. Soundings made in 1957 show the depth in the natural bar channel, which is somewhat to the north of the dredged channel, is 6 feet deep for a width of 50 feet, and 5 feet deep for a width of 300 feet. This channel heads directly towards the Inner Sunk Rocks which lie about 500 feet from the entrance bar. The buoyed entrance channel is at least 10 feet deep between the Outer and Inner Sunk Rocks to the entrance bar.

19. The tides at Hampton are semidiurnal. The mean range of tide is 8.3 feet and the spring range 9.5 feet. The highest tides are estimated as 12 feet above and the extreme minus tide as 2.3 feet below mean low water. A study of 17.7 years of tide records at Portsmouth, New Hampshire, which are typical also of Hampton Harbor,

indicate that high tides rose above mean high water by 1 foot or more 107 times annually, 2 feet of more 12 times annually, by 3 feet or more 0.45 times annually, and by 3.5 feet 0.17 times annually. The maximum storm tide height of 3.9 feet above mean high water was measured at the Portsmouth Navy Yard, Maine on 30 November 1944.

20. Current studies made at Hampton in 1931 indicate that the maximum flood current in the inlet is about equal to the maximum ebb current, occurs nearly at midtide, and reaches a peak velocity of about 5.6 feet per second on a tide range of 10.9 feet. Construction of the State jetties in 1934 and 1935 did not affect the currents substantially. The study further indicated that the alongshore currents were very small, variable, but had a net southerly trend.

21. Hampton Harbor is shown on the Geological Survey quadrangle maps, Coast and Geodetic Survey Coast Chart 1206, and on the maps accompanying this report.

TRIBUTARY AREA

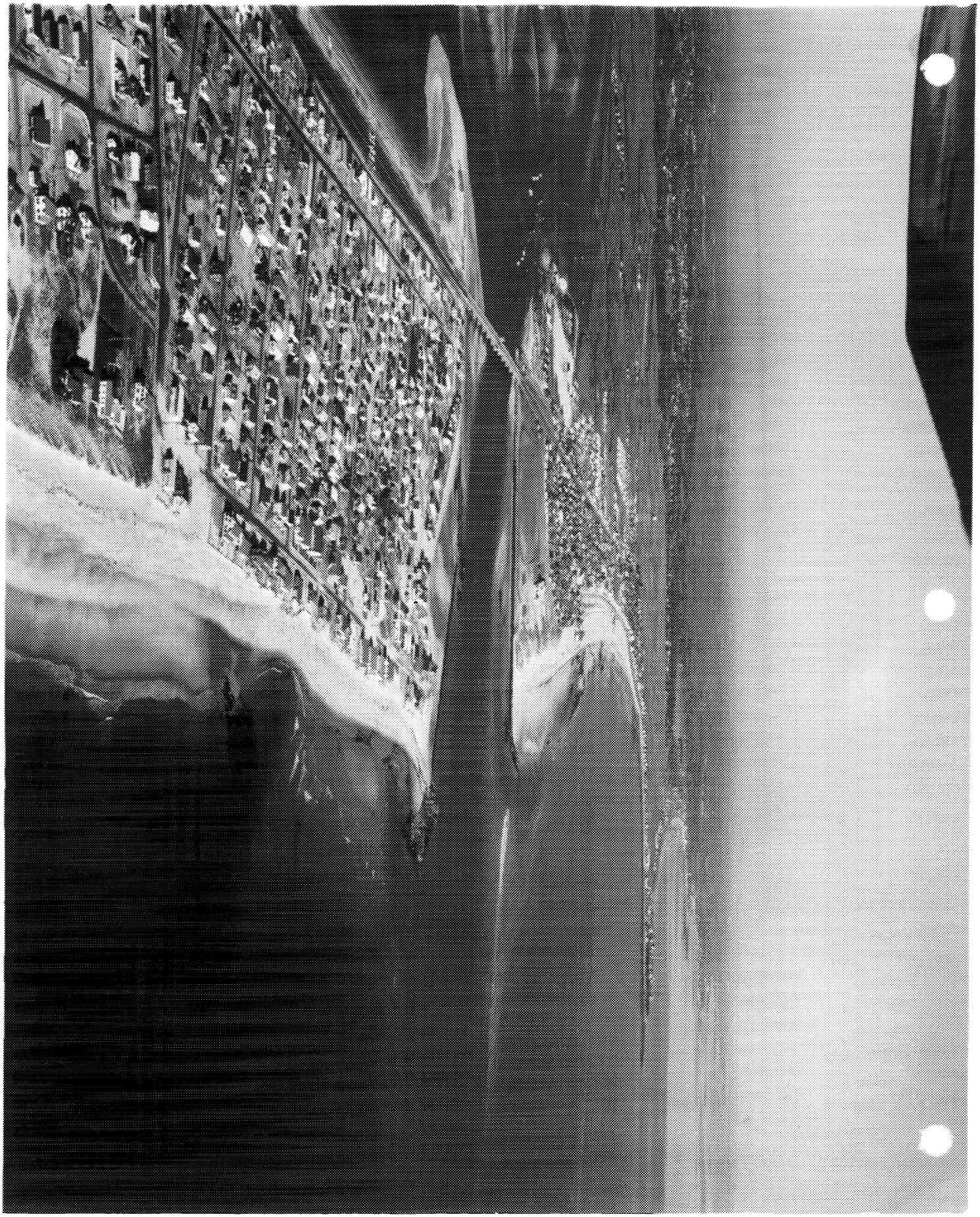
22. The three towns of Hampton, Hampton Falls, and Seabrook abut on Hampton Harbor. There has been no navigation development on the shores of Hampton Falls. The villages of Hampton Beach, north of the harbor entrance, and Seabrook Beach, south of the entrance directly abut the navigable portion of the harbor. The residents of Hampton and Seabrook depend largely upon the expenditures of summer recreational visitors for their income.

23. There has been a substantial increase in recreational activity in the area in recent years. The permanent population of Hampton increased from 3,847 in 1950 to 5,379 in 1960. At Seabrook the increase was from 1,788 to 2,209. However, the summer population is estimated at 5,000 for Seabrook with 50,000 at Hampton on week days. There are 85,000 to 100,000 people in Hampton on week-ends.

24. The area is served by good roads with U. S. Route 1A crossing the harbor inlet and U. S. 1 and Interstate 95 passing 2 miles west of the harbor. The Boston and Maine Railroad crosses the tidal marsh area about 1-1/2 miles west of the harbor.

BRIDGES

25. The entrance to Hampton Harbor is crossed by highway route 1A between Seabrook Beach and Hampton Beach. The bridge is about 1,300 feet long with a single leaf bascule opening having a



horizontal clearance of 42.7 feet and closed vertical clearance of 18.8 feet at mean high water. This bridge was constructed in 1949 by the State of New Hampshire.

26. State Route 33 crosses the Blackwater River about 2 miles south of the harbor entrance on a fixed bridge. This bridge has a horizontal clearance of 20 feet and vertical clearance of 4 feet at mean high water. The Boston and Maine Railroad crosses Mill Creek, Browns River, and Hampton Falls River about 2 miles west of the Harbor entrance on small bridges which are not navigable. Two railroad bridges over a small creek and the Taylor River have clearances for skiffs.

PRIOR REPORTS

27. There have been three previous reports on Hampton River and Harbor, all of preliminary examination scope. The first, published in the Annual Report of the Chief of Engineers, 1889, was unfavorable to improving the river to Hampton Village. The second report, published in House Document No. 247, 58th Congress, 2nd Session, 1903, was unfavorable also to improvement of the river. An unpublished report, submitted in 1930, was unfavorable to a plan for stabilizing the river mouth and protecting the beaches against erosion. The fourth report, dated 23 March 1956, considered navigation improvements at both Rye Harbor and Hampton River and Harbor, New Hampshire. The report found more detailed consideration to be justified and recommended surveys of both locations to determine the extent and cost of the improvement warranted.

28. It is pertinent to this report that since the 1930 unpublished preliminary examination report on Hampton River and Harbor, four studies of beach erosion problems at Hampton have been made by the Corps of Engineers in cooperation with the State of New Hampshire. The first of these, prepared by the Beach Erosion Board 15 July 1932, found that serious erosion at the south end of Hampton Beach resulted from migration of the Harbor inlet and was probably attributable to tidal currents. Need for protection was found to be urgent. Stabilization of the harbor inlet by jetty construction and placement of sand fill on the beach were recommended.

29. A second report, dated 15 April 1942, found dikes and jetties constructed in accordance with earlier recommendations to be successful in stabilizing the harbor inlet and in protecting the southern end of the beach, but reported serious erosion and storm damage at Hampton Beach in the vicinity of the business center, and immediately south thereof. It further reported a general trend

of accretion in all areas except the backshore areas adjacent to the business center, extensive shoaling of the harbor in the period from 1935 to 1942, and no need for protective works at Seabrook Beach. The report recommended a protected seawall along the business center of the beach with spur groins extending seaward of the wall. A third report, dated 14 August 1953, and published in House Document No. 325, 83rd Congress, 2nd Session, recommended the adoption of a project for placement of sand fill on Hampton Beach, with Federal contribution of one-third of the first cost.

30. The most recent report, submitted 25 August 1960, found that further beach erosion measures were needed at Hampton Beach. It recommended modification of the Federal project to provide for construction of a groin and Federal participation in periodic beach nourishment at the north end of Hampton Beach. This report also developed a plan of improvement for consideration of local interests at the north end of Seabrook Beach. The report indicated that the private property along the beach would be protected by widening the north end of the beach by placement of sand fill and enlargement and extension of the south jetty at the Hampton Harbor entrance to retain the fill. The estimated first cost of this work was $365,000 (August 1960).

31. The 1960 report noted also that if erosion along the south bank of the inlet reaches the point that protection is needed the top of the south jetty could be raised to +12 as recommended in the 1932 report. Another erosion problem along the Hampton shore immediately west and north of the highway bridge would be solved by construction of a steel bulkhead as proposed by the State Highway Department or by riprap revetment similar to the existing north jetty.

EXISTING CORPS OF ENGINEERS PROJECT

32. There is no existing Federal project for navigation at Hampton Harbor; however, a Beach Erosion project for the improvement of Hampton Beach was adopted on 3 September 1954. This project provided for Federal participation in the amount of one-third of the first cost of widening to a general width of 150 feet by direct placement of sand fill approximately 5,200 feet of beach adjacent to and extending northward from Haverhill Street, with an added widening along 1,250 feet of the northern end of the fill area. This project was completed by the State of New Hampshire in December of 1955 using sand dredged from Hampton Harbor. Modification of this project to provide for Federal participation in the cost of a groin and beach maintenance was recommended in the August 1960 report. This project modification was authorized by the River and Harbor Act of 23 October 1962. In addition, Section 103 of this

Act, (Public Law 87-874) increased the limit of Federal participation from one-third to one-half of the cost of construction.

LOCAL COOPERATION ON EXISTING PROJECT

33. In accordance with the provisions of Public Law 727, approved by Congress in 1946, Federal participation in the original beach erosion project for Hampton Beach was limited to one-third the first cost of construction. Local interests agreed: to assure maintenance of the protective and improvement measure during its useful life; provide all necessary lands, easements, and right-of-way; hold and save the United States free from all claims for damages; assure that water pollution endangering the health of bathers will not be permitted; assure continued public ownership of the shore and administration for public use only; submit plans for the work to the Chief of Engineers for approveal. All of these conditions were met by the State of New Hampshire. It is to be noted that specified maintenance requirements for the project include the artificial placement of an estimated 22,700 cubic yards of sand on Hampton Beach annually. The 25 August 1960 Beach Erosion Report increased this estimate to 40,000 cubic yards per year. The harbor is a logical source of this sand.

OTHER IMPROVEMENTS

34. The State of New Hampshire has expended substantial sums in improvement to Hampton Harbor as well as in the improvement of Hampton Beach. In 1935, following generally the recommendations of the report of the Beach Erosion Board in 1932, the State of New Hampshire constructed stone jetties and dikes to stabilize the entrance of Hampton Harbor, dredged certain areas in the harbor using the sand so removed to rebuild the beach on the northerly side of the inlet as a State Park; and erected a pile and timber pier with a runway and float landing on the north bank of the river a short distance above the Route 1A highway bridge. In 1941, the State further dredged a channel 2,700 feet long, 75 feet wide, and 6 feet deep at mean low water. This channel is located 500 feet west of and parallel to the south approach of the highway bridge and leads to the State boat landing, constructed on the Seabrook side of the harbor two years later. In 1955, the State of New Hampshire, partially in connection with providing sand fill in accordance with the Federal Beach Erosion Project for Hampton Beach, dredged the Seabrook channel to a depth of 7 feet for a width of 75 feet, and two anchorage areas in the harbor and river to depths of 7 feet or more. In addition, the State dredged the entrance channel to a depth of 8 feet for a width of 100 feet in

the spring of 1956. A total of over 500,000 cubic yards of material was removed.

35. State expenditures in these navigation improvements to Hampton Harbor are estimated to exceed $800,000. In addition, the State is estimated to have expended over $1,500,000 in the improvement of Hampton Beach by the construction of sea walls, revetment, and promenades, exclusive of an extensive program of highway improvements directly affecting the harbor and beach area, making them easily accessible and highly desirable recreational sites. Additional funds were expended on reconstruction of the Hampton landing in 1958. A new beach facility, the "Hampton Beach Sea Shell", was dedicated on 23 June 1963.

36. In 1959 the State authorized redevelopment of the marshland in Hampton adjacent to the harbor. Plans have been prepared by the Hampton Municipal Development Authority for future development which would provide waterfront commercial, residential, highway, and park development over most of the marsh east of the railroad. As a first stage, plans are complete for 318 acres west of Hampton Beach. By hydraulic dredging and land fill it is proposed to create 126 acres of waterways and lagoons 6 or more feet deep, 139 acres of residential lots, and 53 acres for commercial street and other public use. After approval of the plan by the Town, the Authority will borrow the estimated $2,000,000 needed for construction. Because planning will require at least one year more and construction four years, this development is not anticipated before 1968.

TERMINAL AND TRANSFER FACILITIES

37. There are 6 piers in Hampton Harbor. The State of New Hampshire maintains two pile and timber piers, one in Hampton about 1,500 feet north of the entrance and one in Seabrook one-half mile south of the entrance. The Hampton pier has a 6-foot walkway to a float that has depths of 4 to 6 feet alongside. The Seabrook pier has no float and a water depth of about 3 feet at the outer end. Both landings are open to the public.

38. The Smith and Gilmore Pier, 200 feet northwest of the Hampton public landing, is a timber pier and float with berth depths of 3 to 6 feet. This pier is used by charter fishing party boats and a lobster dealer. Fuel and water are available.

39. The Hampton Beach Marina, recently constructed about 2,000 feet north of the harbor entrance, has berths for 60 boats in 6 feet of water, a launching ramp, and a 20-ton travel lift which can handle boats up to 55 feet long. Facilities include shops for engine and hull repairs and sale of fuel, water and supplies.

40. There are two private docks operated by lobster fishermen east of the Seabrook public landing. There is an outboard launching ramp on the Hampton River about 2 miles north of the harbor entrance.

IMPROVEMENT DESIRED

41. A public hearing was held at Hampton Beach, New Hampshire on 29 November 1955. The New Hampshire Department of Public Works and Highways, the New Hampshire Forestry and Recreation Division, the New Hampshire Seacoast Regional Development Association, and the New Hampshire Marine Fisheries Association, yachting interests, the Town governments of Hampton and Rye, and interested individual commercial fishing interests and owners of recreational craft spoke in favor of improvements. They requested dredging at the Harbor entrance and within the harbor to provide harbor channels and anchorage areas of 10-foot depth. They further expressed a desire for heightening and extending the existing jetties in order to afford greater protection within the entrance channel and in the harbor proper.

42. A representative of the New Hampshire Foresty and Recreation Commission expressed the State's concern for the inadequate facilities which the harbor provided for the increasing number of commercial and recreational boatmen in the area. The fact that harbor improvements had not kept pace with the rapid increase in highway, hotel, and other recreational facilities was cited. Lobstermen, owners of party-fishing boats, and of small boat rental services cited their concern for the substantial number of days when in spite of fair weather, conditions over the entrance bar made it unsafe for small boat navigation. They further cited extensive delays suffered by party boats. Recreational craft interests cited the extreme limitations which natural conditions in the river and harbor place upon the use of such boats. It was observed that craft normally anchored in the river are prevented from going down the river into the harbor by sand bars in the river. It was further observed that bars and sand deposits in much of the river and harbor (prior to the 1955 State dredging for beach fill) deprived many boat owners of substantial

percentage of their potential boat use.

43. Local and State interests have been consulted a number of times since the hearing and have reiterated their desire for entrance channel and anchorage improvements. The New Hampshire Port Authority held a public hearing 9 October 1958 to determine local attitudes on the plan of improvement considered in this report.

COMMERCE AND VESSEL TRAFFIC

44. The only commercial use of the harbor is by 14 full-time and 27 part-time lobster boats that land about 170,000 pounds of lobster annually. This catch, at $0.45 per pound, is worth about $77,000 to the fishermen. These boats are estimated to make about 7,000 vessel trips annually. Additional trips would be possible if the entrance channel is improved. Local interests anticipate that the lobster fleet would be expanded by transfer and purchase of new boats but this is questionable in view of the estimate by the U. S. Fish and Wildlife Service that the improvement would only result in a 5 percent increase in the annual catch. The expected increase is 8,500 pounds, worth about $3,800 annually. The harbor is also used by a fleet of 170 recreational craft valued at about $450,000. Improvement of the entrance is expected to result in a 10 percent increase in the fleet.

DIFFICULTIES ATTENDING NAVIGATION

45. The shoal entrance channel and breakers make navigation hazardous for small boats. Shoaling west of the bridge has reduced the available anchorage.

WATER POWER AND OTHER SPECIAL SUBJECTS

46. This harbor and the desired improvement present no problems pertaining to water power, flood control, pollution or related subjects. No adverse effects on fish and wildlife are anticipated.

PLAN OF IMPROVEMENT

47. Local interests requested improvement of the harbor and the entrance channel. The sounding made in July 1957 showed ample anchorage areas west of the bridge for the existing fleet. There were more than 35 acres over 6 feet deep at that time. Since then there has been substantial shoaling but the reduction in anchorage areas was partly compensated for by the construction of the Hampton Beach Marina. Hampton Harbor has a history of rapid shoaling. The present depths are the result of dredging to obtain fill for Hampton Beach.

48. Estimates made of the shoaling rate in the harbor indicate that about 20,000 cubic yards per year would have to be removed to maintain 22 acres 6 feet deep. It does not appear that prospective navigation use by itself would justify the cost of maintaining the harbor and improving the entrance. However, the harbor has been dredged several times to provide fill for Hampton Beach, and the beach fill requirements are estimated to be about 40,000 cubic yards per year. (After construction of the groin recommended in the 25 August 1960 Beach Erosion Report). Because the river and harbor back of the beach are the only logical and economical source of beach fill it is considered that the harbor will be dredged in the future. Adequate navigation channels and anchorages desired by local interests in the harbor can be maintained at no substantial cost when beach fill is obtained. For that reason, a Federal improvement inside the harbor is not considered necessary.

49. Improvement of the entrance channel is a different matter. The natural depth over the entrance bar appears to be about 4 to 6 feet, about 3,500 feet from the bridge. The outer edge of the bar extends out 4,300 feet to the Inner Sunk Rocks, a groups of ledges exposed at low tide. The buoyed entrance channel crosses the bar, turns sharply northward on the shore side of the Inner Sunk Rocks, then turns eastward to sea between the Inner Sunk Rocks and Outer Sunk Rocks. Instead of being semicircular, the entrance bar is approximately triangular, probably because of wave diffraction around the Inner Sunk Rocks.

50. Dredging was considered to improve the channel across the entrance bar, but a comparison of soundings 1.5 years after the State dredged an 8-foot channel, showed annual shoaling of almost 6 feet and about 50,000 cubic yards. It is probable that this rate would have been smaller had the State channel coincided with the natural channel, but even then redredging would be needed every year. Consideration was therefore given to jetty extensions which might increase the natural bar channel depth.

51. Beach erosion studies indicate a southward drift of sand along Hampton Beach toward the inlet, with beach losses of about 40,000 cubic yards annually. There is also a much smaller net drift northward along Seabrook Beach for a short distance south of the inlet. The 12-foot depth contour lies, 2,200 feet northeast of Town Rocks but only 700 feet southeast of White Rocks. Between the jetties the natural channel is over 8 feet deep for a width of 400 feet. That depth extends for a distance of about 1,500 feet from the narrowest point in the entrance, off Gun Rock.

52. A jetty to impound most of the drift southward toward the inlet would have to be at least 1.600 feet long and extend in an easterly direction. A jetty of this size would impound about 1,300,000 cubic yards, which would be enough to contain the Hampton Beach losses for 33 years. As part of this material nourished Seabrook Beach, it is possible that such a jetty would cause erosion south of the inlet. It would reduce shoaling inside Hampton Harbor, which was about 32,000 cubic yards per year between 1935 and 1954 and 49,000 cubic yards per year between 1955 and 1957. However there is substantial doubt that such a jetty extension would improve the bar channel, because of the widely flared opening between the jetties which would permit the bar channel to migrate, and because of the amount of sand between the jetties and the offshore rocks where it can be moved by currents and waves. In addition, the annual cost of the jetty extension would be greater than the annual benefits resulting from an improved entrance channel.

53. Constriction of the inlet would tend to deepen the bar channel, limit its migration and reduce the volume of sand that goes into the harbor. If the channel remained in its present location it would move the outer bar seaward until it joins the Inner Sunk Rocks. A jetty from the south side of the inlet might shift the bar channel northward but would trap sand moving south from Hampton Beach. A jetty from the north side of the inlet toward the south edge of the Inner Sunk Rocks would shift the channel southward, which is the shortest distance to deep water, and direct sand from Hampton Beach into the area behind the Rocks.

54. Extending the north jetty 1,000 feet to the southeast to a point 1,000 feet from White Rocks, would extend the present naturally deep channel. Since the 8-foot contour now extends 1,500 feet seaward from the 1,000-foot wide inlet section off Gun Rocks, with an expanding inlet opening, it is considered the 8-foot depth contour would be at least 1,500 feet seaward from the new inlet opening. The present entrance bar is about 1,200 feet wide between the inside and outside 8-foot contours at this point, with offshore depths of over 24 feet within 1,700 feet of the center of the new inlet. It is therefore considered that such a jetty would maintain a bar channel 8 feet deep.

55. A wider inlet opening would be less effective. A narrower inlet might be more effective but might reduce the inlet flow and increase shoaling in the inlet. The additional length of the 1,000-foot wide inlet is not expected to change the inlet current velocities or volume significantly.

56. Such a jetty is not expected to reduce the volume of sand moving into the harbor through the inlet very much, although part of the sand moving south toward the inlet is expected to build up the beach on the outside of the jetty, and shoal the area from the jetty to the Inner Sunk Rocks. This jetty and the deeper bar channel is not expected to significantly reduce the volume of material bypassing the inlet and nourishing Seabrook Beach to the south.

57. In view of the above a north jetty has been designed to reduce the inlet width to 1,000 feet and move it to the south. A top elevation of 8 feet above mean low water (approximately mean high water) at the outer end would be adequate to control the inlet, but the inner end should be at an elevation 12 feet above mean low water, the height of the existing north jetty. While the north jetty is not intended to be a sand-impounding structure, it is likely that some accretion will occur along the north side of the jetty. However, because of the jetty alignment, it is considered that a 200-foot spur normal to the jetty axis at its outer end is necessary to provide and retain a beach behind the jetty that would reduce wave force acting on the structure. A top elevation of 12 feet above mean low water has been selected for the whole jetty to retain a wider beach for reducing waves, to permit use of the larger stone required because of wave exposure, and to improve the visibility of the structure for navigators.

58. With an estimated water depth off the end of the jetty of about 11 feet at high tide, waves of 8.6 feet will be able to reach the jetty spur. Because about one-half of this wave would overtop the structure, a K delta of 3.0 was used in the Hudson-WES formula. The formula indicated that rough quarry stone of 3.2 tons would be required. Therefore, the jetty spur has been designed with a 5-foot top width, and a 7-foot thick layer of 3 to 4-ton cover stone on 1.5 to 1 slope, placed to minimize large openings. A core of 25 to 700-pound stone is required to slow the passage of beach sand through the jetty and support the cover stone. Because the jetty will be backed up by the beach, only the last 50 feet will require heavy stone. The remainder of the back slope below elevation 8 should be covered by 1/2 to 1 ton-stone, 3 feet deep on 1.5 to 1 slope, to protect the structure until the beach fills up.

59. The channel side of the jetty is so protected that 2 to 3-ton cover stone 5 feet thick on a 1.5 to 1 slope, similar to the existing jetty, will be adequate. Core stone of from

20 to 400 pounds would be required to reduce the movement of sand through the jetty. Because of its location, the jetty extension will undoubtedly be used by bathers from Hampton Beach, and by fishermen. It is therefore considered the top width cover stone should be carefully placed to permit pedestrian use.

60. The south jetty was built to about half tide level and has settled somewhat so that its top is now about 3 feet above low water. As noted in the 25 August 1960 Beach Erosion report, sand from Seabrook Beach moves northward over the jetty into the harbor inlet. Because of the relatively short and steep beach and the direction of wave approach, it is considered that a jetty with a top elevation of 12 feet would allow sand to be carried into the inlet by overtopping waves. This movement would be sharply reduced by raising the jetty to elevation 16 for the outer 300 feet and connecting it to high ground with a 180-foot spur. The Beach Erosion report indicated that private property along the beach could be protected by widening the beach and extension of the south jetty. The recommended plan for beach improvement would raise the outer 300 feet of the existing jetty, construct the 180-foot spur, extend the jetty 80 feet at elevation 16, and extend it an additional 400 feet at elevation 5. It is not considered that extension of this jetty is needed to prevent the movement of sand into the inlet unless the beach is widened. Therefore the plan includes raising the outer 300 feet of the existing south jetty to elevation 16 and constructing the 180-foot spur. The design of the south jetty would be similar to that of the north jetty.

61. Elevation of part of the south jetty and construction of the spur from the jetty to shore is expected to reduce losses of sand into the inlet during reversals in direction of littoral drift, and thus cause minor accretion to Seabrook Beach for a short distance south of the jetty. The north jetty extension is relatively short (ending approximately at the mean low water line) and its effect in reducing supply to beach areas south of the inlet is not expected to be important, as its impoundment capacity should be exhausted relatively soon after construction. However, provision should be made for continuation of a supply of beach material to Seabrook Beach, if found to be necessary. Therefore, local interests should be required to provide the necessary offsetting nourishment in the event a reduction in supply is observed at Seabrook Beach after the harbor improvement, causing recession of the shore or deepening of the nearshore bottom.

62. Construction of the jetties would not be sufficient to relocate the channel without further work. It is therefore considered that dredging will be required to establish a new channel. It is proposed to dredge a channel 8 feet deep and 150 feet wide across the entrance bar. After this initial dredging it is expected the entrance channel will hold this depth with little future maintenance. Although the bar channel may migrate somewhat away from where it is dredged, this movement is not expected to become a problem.

63. Several alternative areas were considered as spoil disposal sites for the materials to be dredged from the channel. The areas included Hampton and Seabrook Beaches, at sea, or nearby marsh lands. The U. S. Fish and Wildlife Service (See Appendix A) has reported that spoil placed on the beach, or west of the developed area just north of the inlet would have no adverse effect on wildlife, but recommends that no spoil be placed on mud flats or marshes north, west, or south of the harbor.

64. The areas approved by the Fish and Wildlife Service are adequate, and it is considered that placement of materials on one of the nearby beaches would serve the most useful purpose. Because the rate of the depletion of beach materials is substantially greater along Hampton Beach than at Seabrook Beach it is recommended that spoil materials be placed on Hampton Beach. This would increase the rate of accretion behind the proposed north jetty, and speed up the formation of the wave reducing beach.

SHORE LINE CHANGES

65. Construction of the jetties and the initial dredging of the entrance channel would not have any substantial effect on the shore lines, beyond the moderate accretion expected immediately adjacent to the jetties. No substantial change in currents inside the inlet, or in the volume of sand by-passing the inlet is anticipated. Therefore the improvement would not affect the shoreline or bridge piers inside the inlet.

REQUIRED AIDS TO NAVIGATION

66. The U. S. Coast Guard has been consulted and has advised that 4 additional buoys would be required if Hampton Harbor is improved. The first cost of the additional navigation aids would be $800, with additional annual maintenance of $200.

ESTIMATE OF FIRST COSTS

67. The first cost is given below for the improvement recommended in this report. Federal construction consists of building the two jetty extensions and dredging the entrance bar channel. The U. S. Coast Guard will provide necessary navigation aids. Local interests will provide spoil disposal areas.

68. The jetty construction will require quarry stone ranging up to 4 tons which can be obtained locally and trucked to the site and placed by dumping and by crane. Soundings from previous surveys indicate that the material to be dredged is sand and silt that has drifted into the channel location. Dredging quantities are in terms of in-place measurement and include an allowance for 1 foot of overdepth and side slopes of 1 vertical on 3 horizontal. Cost estimates are based on prices prevailing in July 1963. Contingencies are about 15 percent.

69. The detailed estimate of cost is as follows:

PROJECT COST ESTIMATE

Cost Account Number		Cost Estimate (July 1963)
09	CHANNELS - 8-ft. channel	
	(Dredging 30,000 c.y. @ $1.50-45,000)	$ 52,000
	(Contingencies - 7,000)	
10	BREAKWATERS - 2 jetties	
	(Place 32,000 tons stone @ $6.50-208,000)	
	(Contingencies - 30,000)	238,000
30	ENGINEERING & DESIGN	10,000
31	SUPERVISION & ADMINISTRATION	25,000
	TOTAL COST (Corps of Engineers Funds and Non-Federal Contributions)	$325,000
	Non-Federal Contributions	$133,000

TOTAL NON-FEDERAL COSTS

Lands and Damages	0
Relocations	0
Other	
Cash Contribution	$133,000
Total Non-Federal Costs	$133,000

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SUMMARY OF ESTIMATED COSTS

Federal Cost	
Corps of Engineers	$192,000
U. S. Coast Guard (Additional Navigation Aids)	1,000
Required Non-Federal Costs	
Cash Contribution	133,000
Total Federal and Required Non-Federal Costs	$326,000

ESTIMATE OF BENEFITS

70. Improvement of the Hampton Harbor entrance channel will result in additional commercial fishing and increased recreational boating. The existing lobster fishing fleet is hampered by the entrance bar shoal. Development of recreational boating has been restricted by the navigation hazard as well as the lack of depths in the channel.

71. The U. S. Fish and Wildlife Service has been consulted on the availability of additional lobster and on the increased landings that might be expected to follow improvement. They report (see Appendix A) that the improvement would result in a 5 percent increase in the annual catch. As the prospect of the return to the existing commercial fishery is relatively small, it appears questionable that additional lobster boats would be attracted to Hampton Harbor. However, it is considered reasonable that a five percent increase in annual catch could accrue to the existing 14 full time and 27 part time boats as a result of increased fishing time allowed by elimination of tidal delays. This is an increase of 8,500 pounds of lobster annually from the present fishing grounds.

72. The annual increase in lobster catch, at $0.45 per pound, would be worth $3,800 to the fishermen. As these fishermen would be extending their productive time in existing vessels, the only additional costs, would be operating costs such as fuel, labor, and perhaps extra traps, line, and bait. These added costs, needed to obtain the 8,500 pounds of lobster by 41 full and part time vessels, are estimated to be 20 percent of the gross value of the catch. Therefore, the immediate net annual benefit to the general public would be $3,000.

73. The Fish and Wildlife Service has also reported that the real value of lobster, when compared to other commodities is expected to double over the next 50 years. The net annual benefit at the end of the project life would therefore be $6,000. However,

this future relative increase in real value of lobster is considered too conjectural to serve as a basis for project justification.

74. Benefits from increased recreational boating have been evaluated as the gain in annual return which the owner of the craft would enjoy, if the channel is improved. The annual net return to the owners has been taken as the amount the owners would receive if they chartered to others. This amount is expressed as a percentage of the current market value of the boat. The increase in value to the owner is the difference between the value received by the owner under present conditions and with the increased use made possible by the improvement. The benefit computation is shown in the table on page 21.

BENEFITS FROM INCREASED RECREATIONAL BOATING

TYPE OF CRAFT	LENGTH (feet)	NO. OF BOATS	DEPRECIATED VALUE AVERAGE	DEPRECIATED VALUE TOTAL	PERCENT RETURN % OF IDEAL IDEAL	PRES.	FUTURE	GAIN	VALUE OF GAIN	AWAY ON CRUISE AVG. DAYS	% OF SEASON	VALUE
EXISTING FLEET												
Outboards	10-20	94	$ 500	$ 47,000	11	100	100	00	0	0	-	-
Cruisers	15-30	39	2,500	97,500	7	85	100	1.0	$ 980	5	5	$ 80
"	31-50	12	5,000	60,000	7	70	100	2.0	1,200	10	10	120
Sailboats	10-20	3	2,000	6,000	10	90	100	1.0	60	0	-	-
Charter)	30-40	7	6,500	45,000	13	85	100	2.0	910	0	-	-
Cruisers)	40-50	15	13,000	195,000	13	75	100	3.2	6,240	0	-	-
TOTALS		170		$451,000					$9,390			$200
NET BENEFIT $9,390 - $200 :: SAY $9,200												
NEW BOATS PURCHASED BECAUSE OF IMPROVEMENT												
Cruisers	15-30	4	$ 3,000	$ 12,000	7	0	100	7.0	$ 840	5	5	$ 40
"	31-50	3	7,000	21,000	7	0	100	7.0	1,470	10	10	150
Charter Cruisers	30-40	1	7,000	7,000	13	0	100	13.0	910	0	-	-
TOTALS		8		$ 40,000					$3,220			$190
NET BENEFIT $3,220 - $190 :: SAY $3,000												
BOATS TRANSFERRED BECAUSE OF IMPROVEMENT												
Outboards	10-20	5	$ 500	$ 2,500	11	100	100	0	$ 0	0	-	-
Cruisers	31-50	4	5,000	20,000	7	85	100	1.0	200	10	10	$ 20
TOTALS		9		$ 22,500					$ 200			$ 20
NET BENEFIT $200 - $20 :: SAY $200												
TRANSIENT FLEET												
Cruisers	31-50	10	$ 7,000	$ 70,000	7	85	100	1.0	$ 700	0	-	-
NET BENEFIT $700 - 0 :: SAY $700					TOTAL RECREATIONAL BOATING BENEFITS				$13,100			

75. Small craft can operate at Hampton without too much difficulty but the entrance channel is not deep enough for the larger craft to go in and out safely at low tide. Benefits for the 170 boats in the present fleet are estimated to be $9,200 annually. It is anticipated that the fleet would increase by 10 percent solely as a result of improvement, one half being transferred from other harbors and one half newly purchased. As 8 new boats are expected to be added to the existing fleet within a few years after improvement, the resulting benefits of $3,000 can be reasonably considered immediate benefits. Benefits from the 9 transferred boats would be $200. Transient boats visiting the harbor also would be benefited by the improvement. During the boating season the average number of visiting craft at any one time is 10. The benefit to these craft is $700.

76. It is reported that boats frequently strike the sand bottom in the entrance channel, with consequent minor damage. However, no firm information is available with which to estimate the annual damage, or the reduction resulting from improvement of the channel.

77. Improvement of the entrance channel would have some effect on the value of the property around the harbor, and tend to induce further development of shore facilities. As this would be a secondary benefit it has not been evaluated. The evaluated benefits are summarized below:

	General	Local	Total
Commercial Fishing	$ 3,000		$ 3,000
Recreational Boating	6,550	$6,550	13,100
	$ 9,550	$6,550	$16,100
Percent of Total	59%	41%	100%

78. The United States Fish and Wildlife Service has reported that significant benefits would accrue to the sport fishery through repair and extension of the existing State jetties. (See Appendix A for their report). They estimate that the average annual fishermen use of the repaired and extended jetties would amount to 16,424 fishermen days, if the proposed jetties provide a safe walking surface, and there is a guard rail, reasonable access and a parking area. Based upon an average fisherman-day of 4 hours per fishing trip and $1.50 per fisherman-day, the average annual fishery benefits would amount to $24,600 during the project life. Present fisherman use of the north jetty is estimated to be $500. Therefore, the annual net fishery benefits are estimated to be $24,000 with repair and extension of the jetties.

79. The New Hampshire Division of Parks would consider permitting fisherman access to the jetties if reasonable safety factors are included in the structure design. It is considered that the cover stone along the top of the jetties, if carefully placed, could provide for a reasonably safe walking surface. Asphaltic concrete could be used at points of excessive vertical variation or in large voids, if found necessary. A 3-foot high railing consisting of pipe stanchions and a chain runner extending the full length of the proposed jetties would provide a desirable safety factor for fishermen. A portion of the existing parking area in the StatePark could be made available for fisherman use. It is estimated that the necessary modifications could be obtained for about $5,000. Total annual charges would be about $200. The project cost estimate is based on unit prices including sufficient allowance for these added costs.

80. The improvement described under "Plan of Improvement", i.e. excluding the above mentioned jetty modifications for sport fishing, would result in sufficient benefits to economically justify the proposed improvement. These benefits would result from commercial fishing and recreational boating, a total of $16,100. If the benefits of $24,000 for the jetty sport fishing are included, the total benefits would be $40,100 annually.

APPORTIONMENT OF COSTS AMONG INTERESTS

81. The first costs of construction have been apportioned between the Federal government and local interests in proportion to the general and local benefits, which are 59 and 41 percent, respectively. The apportionment of costs is as follows:

FEDERAL:	
Corps of Engineers: 59% of $325,000	$192,000
Coast Guard: Additional Navigation Aids	1,000
TOTAL FEDERAL	$193,000
NON-FEDERAL:	
Cash Contribution: 41% of $325,000	$133,000
TOTAL NON-FEDERAL	$133,000

Future maintenance is estimated to be equal to $2,200 annually. Of that amount $2,000 is estimated for Corps of Engineers maintenance of the jetties and channel, and $200 will be needed for maintenance of the additional navigation aids by the Coast Guard.

ESTIMATE OF ANNUAL CHARGES

82. Annual charges for the improvement have been estimated on the basis of 50-year project life with Federal and non-Federal interest rates of 2.875 percent. Maintenance costs have been based on experience with similar projects. Jetties repairs are estimated to be required every 10 years at an annual rate of 150 tons of stone. With the jetties, shoaling is not anticipated in the channel. However, to allow for minor dredging an allowance of 500 cubic yards per year has been made. The investment and annual charges for the improvement are shown below.

Federal Investment	
Corps of Engineers (.59) ($325,000)	$192,000
Coast Guard	1,000
TOTAL FEDERAL	$193,000
Non-Federal Investment	
Cash Contribution (.41) ($325,000)	$133,000
Federal Annual Charges	
Interest and Amortization (0.03795)($193,000)	$ 7,300
Maintenance: Jetties	1,100
Channel	900
Navigation Aids	200
	$ 9,500
Non-Federal Annual Charges	
Interest and Amortization (0.03795)($133,000)	5,000
TOTAL ANNUAL CHARGES	$ 14,500

COMPARISON OF BENEFITS

83. Comparison of the evaluated benefits of $16,100 and the annual charges of $14,500 indicate a benefit-cost ratio of 1.1 based on project effect on navigation. Benefits of $24,000 from jetty sport fishing increases the benefit cost ratio to 2.7.

PROPOSED LOCAL COOPERATION

84. The benefits from improvement of Hampton Harbor entrance are 41 percent local in nature, and therefore it is considered local interests should make a cash contribution of 41 percent of the construction cost of the improvements. Because Corps of Engineers expenditures toward a small navigation project under Section 107 of the 1960 River and Harbor Act are limited to $200,000, local interests would be required to assume all costs in excess of this limit as required to ensure that expenditure of Federal funds will result in a complete and fully effective project.

85. Local interests should be required to maintain 2 public landings and assure they will be open to all on equal terms. The 2 existing public landings are adequate for this purpose. Because continued use of the harbor depends on continued availability of adequate interior channels and anchorage, which can be maintained when fill required for Hampton Beach is obtained, it is considered that local interests should be required to maintain at least 22 acres of anchorage and access channels 6 feet deep in the harbor west of the Route 1A highway bridge and provide access to the public landings. These requirements of local cooperation are to be provided without cost to the United States except for any Federal share of costs involved in procuring sand for nourishment of Hampton Beach in accordance with the authorized project therefor.

86. Also, local interests should provide such beach nourishment at Seabrook Beach as may be needed to offset a possible reduction in supply because of inlet improvement, and to maintain the existing State jetties at Hampton Inlet without cost to the United States. In addition, local interests should provide without cost to the United States, all lands, easements, and rights-of-way, and suitable spoil disposal areas, for the construction and maintenance of the project; and should hold and save the United States free from damages that may result from

construction and maintenance of the project. Local interests have provided reasonable assurances that all the above requirements of local cooperation will be met (See Appendix B). The Town of Hampton has appropriated $20,000 toward the cost of this project and its share of the cost of the groin at the North end of Hampton Beach (estimated total cost $18,000) authorized by the 1962 River and Harbor Act. A bill, enacted July 1963 by the New Hampshire State Legislature includes an appropriation of $152,500 for a cash contribution to the harbor project. In addition an appropriation of $89,000 is included to put with the Hampton $20,000 for the Non-Federal share of sand replenishment and groin construction on Hampton Beach. The bill also provides bonding authority to finance up to $109,000 for the Federal share of the beach project cost pending Federal appropriation and reimbursement.

COORDINATION WITH OTHER AGENCIES

87. All Federal, State and local agencies having an interest in Hampton Harbor were notified of the public hearing held in Hampton 29 November 1955. All interested agencies have been consulted throughout the study concerning the effects of the proposed improvement on their activities. Comments of the U. S. Fish and Wildlife Service are contained in Appendix A. Comments of local interests are contained in Appendix B.

SCHEDULE FOR DESIGN AND CONSTRUCTION

88. It is estimated that preparation of contract plans and specifications will require 5 months. The estimated cost is $10,000.

89. Construction of the project can be accomplished under two contracts, one for jetty construction requiring about 6 months and one for dredging of the entrance channel requiring one month. Dredging would not be effective until the north jetty is substantially completed, so the dredging contract should be deferred and contract quantities based on soundings made after the north jetty has been constructed. It is expected that the inner harbor dredging by the State would be undertaken at the same time, and that the scope of this initial harbor dredging would be in the order of magnitude of 150,000 cubic yards, or about 3 months of dredging. Expenditures are as follows:

a. Allocated to date

Detailed Project Report	$1,000

b. Required to Complete

Plans and Specifications	$ 9,000
Construction, Engineering during construction, Supervision & Administration	315,000*
	$325,000

* Including local cash contribution of $133,000.

c. Total Project Cost

Federal	$192,000
Non-Federal	133,000
	$325,000

OPERATION AND MAINTENANCE

90. Maintenance of the improvement will be the responsibility of the United States. The existing State jetties are in good condition and there does not appear to be any reason for Federal assumption of their maintenance. After the improvement is constructed they will be more protected, and maintenance will be needed only to prevent shore erosion. Federal maintenance will be needed to replace stone lost from the north jetty extension and the raised part of the south jetty. The loss of stone has been estimated at 3,000 tons over a 20-year period, an average of 150 tons per year. It may also become necessary to redredge the entrance bar because of storm action. This maintenance dredging has been estimated to be 5,000 cubic yards every 10 years. The annual cost of project maintenance has been estimated to be $2,000.

CONCLUSION

91. The continued use and future development of Hampton Harbor depends on adequate interior anchorage and access channels and improvement of the entrance channel. Adequate inner harbor facilities are assured by the continued need for material to replace losses from Hampton Beach. Future development is anticipated when the Hampton Municipal Development Authority completes planning for

dredging and filling in a sizeable marsh area just north of the present harbor. In view of the present and prospective navigation use, a Federal project is warranted to improve the entrance channel. This can be accomplished by extending the existing north jetty, raising the outer end of the south jetty, and initial dredging of a channel across the bar 8 feet deep and 150 feet wide. Local interests have indicated that this improvement would meet their needs, and that the required local cooperation would be met. The project is economically justified with a benefit-cost ratio of 1.1, based on effect of navigation, and 2.7 when benefits to sport fishing from the jetties are included, and it meets the criteria for authorization under Section 107 of the River and Harbor Act of 1960.

RECOMMENDATION

92. The Division Engineer recommends Federal improvement of Hampton Harbor, New Hampshire be authorized by the Chief of Engineers under the provisions of Section 107 of the 1960 River and Harbor Act, to provide for extending the north jetty 1,000 feet with a 200-foot spur at the tip, raising the outer 300 feet of the south jetty and constructing a 180-foot spur to high ground, and dredging to provide a channel 8 feet deep and 150 feet wide across the entrance bar. The Federal project costs are estimated at $192,000, not including $1,000 for additional navigation aids. Annual maintenance costs are estimated at $2,000 for the improvement and $200 for the navigation aids. The recommendation is made subject to the condition that local interests:

a. Make a cash contribution of 41 percent of the project construction cost, and assume full responsibility for all project costs in excess of the $200,000 Corps of Engineers cost limitation under Section 107 of the 1960 River and Harbor Act as necessary to provide a complete project.

b. Provide without cost to the United States all necessary lands, easements, and rights-of-way, including suitable spoil disposal areas, needed for construction and maintenance of the project.

c. Hold and save the United States free from damages that may result from construction and maintenance of the project.

d. Maintain without cost to the United States, two public landings with adequate access channels and berths 6 feet deep open to all on equal terms.

e. Maintain at least 22-acres of anchorage and access channels 6 feet deep in the harbor extending from the Route 1A highway bridge, without cost to the United States except for any Federal share of costs involved in procuring sand for nourishment of Hampton Beach in accordance with the authorized project therefor.

f. Provide such beach nourishment at Seabrook Beach as may be needed to offset a possible reduction in supply because of inlet improvement.

g. Maintain the existing State jetties at Hampton Inlet without cost to the United States.

CORPS OF ENGINEERS

U. S. ARMY

HAMPTON

HAMPTON RIVER

HAMPTON FALLS

MARINA

SMITH & GILMORE

PUBLIC LANDING

BATH HOUSE

HAMPTON BEACH

SEABROOK

EXISTING STATE JETTY

TOWN ROCKS

HAMPTON HARBOR

HAMPTON HARBOR INLET

EXISTING STATE JETTY

GUN ROCK

WHITE ROCKS

HAMPTON SEABROOK

SEABROOK BEACH

THOMPSON ROCK

PUBLIC LANDING

SEABROOK

SEABROOK

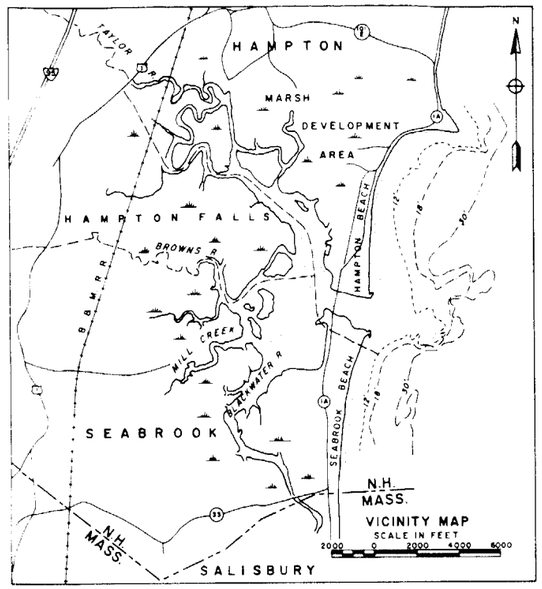
DESIRED IMPROVEMENT RECOMMENDED

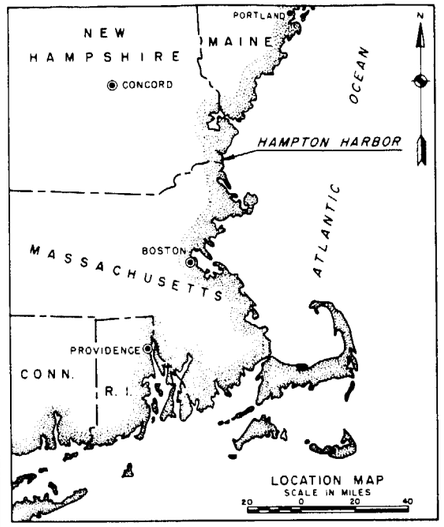
STONE JETTIES

ENTRANCE CHANNEL 8 FEET DEEP

Outer Sunk Rocks

Inner Sunk Rocks





U.S ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS, WALTHAM, MASS.

HAMPTON HARBOR
NEW HAMPSHIRE

1 SHEET — SCALE IN FEET — OCT. 1962

500 0 500 1000 1500

APPROVED
CHIEF, ENGINEERING DIVISION

SUBMITTED
CHIEF, PLANS AND REPORTS BRANCH

CHIEF, SURVEY AND HARBOR SECT. — H&M BRANCH

PROJECT ENGINEER — H&M BRANCH

TO ACCOMPANY DETAILED PROJECT REPORT DATED JULY 30, 1963

FILE NO 1551 D-4-4

PLATE NO. 1

CORPS OF ENGINEERS

U. S. ARMY

MATCH LINE A-A

E726,000 E727,000 E728,000 E729,000 E730,000 E731,000

N147,000 N146,000 N145,000 N144,000 N143,000

SMITH & GILMORE DOCK

PUBLIC LANDING

EXISTING STATE JETTY

TOWN ROCKS

Map Control Sta.

Flood

Ebb

GUN ROCK

EXISTING STATE JETTY

ENTRANCE (U.S.C.&G.S.)

WHITE ROCKS

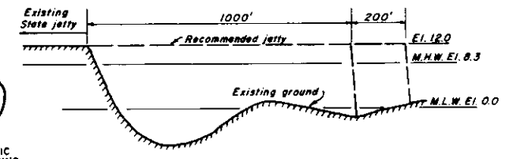
PUBLIC LANDING

LITTLEFIELD

M.L.W.

144 FILL

CSAND



PROFILE NORTH JETTY

SCALE IN FEET

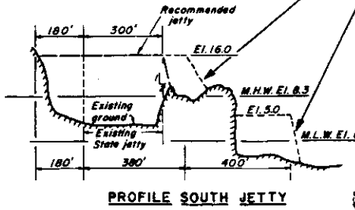
HOR. 200 0 200 400 600

10 0 10 20 30 VER.

IMPROVEMENT FOR CONSIDERATION OF LOCAL INTERESTS RECOMMENDED IN BEACH EROSION REPORT-AUG. 1960

EXTEND AND ENLARGE EXISTING JETTY

WIDEN BEACH BY PLACEMENT OF SAND FILL



PROFILE SOUTH JETTY

SCALE IN FEET

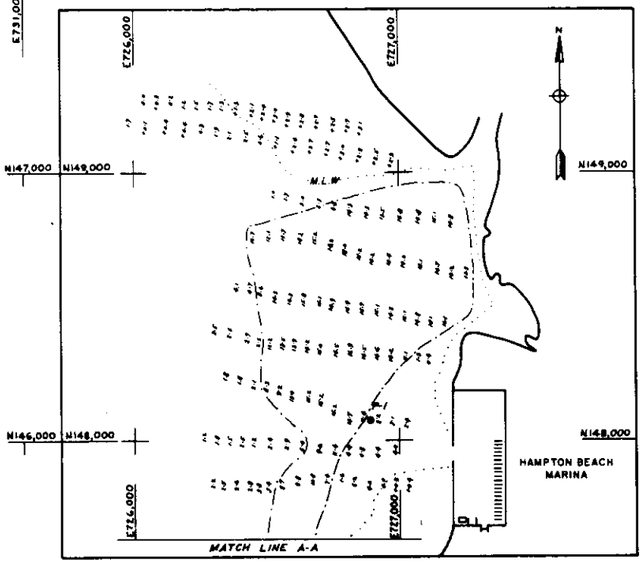
HOR. 200 0 200 400 600

10 0 10 20 30 VER.

PROPOSED JETTY
Top width 5'
Side slope 1 on 1.5

LIST OF PROBINGS

NUMBER	DEPTH OF WATER	ELEVATION BELOW M.L.W. DEPTH OF PROBE	PENETRATION	MATERIAL
1	1.1	8.3	7.2	Hard pack Sand, Refusal
2	6.7	12.2	5.5	" " " "
3	6.8	15.0	8.2	Mud & Sand
4	6.2	6.8	0.6	Sand to rock
5	8.5	8.5	0.0	" " "
6	10.1	15.0	4.9	Sand
7	7.3	15.0	7.7	"
8	4.9	11.1	6.2	Hard pack Sand, Refusal
9	4.7	10.7	6.0	" " " "
10	6.6	15.0	8.4	Mud & Sand
11	6.5	15.0	8.5	" "
12	6.8	15.0	8.2	" "
13	5.6	15.0	9.4	" "
14	9.0	10.2	1.2	Sand, Rock, Refusal
15	7.3	10.0	2.7	Hard pack Sand, Refusal
16	7.7	8.3	0.6	Gravel, Rocks, Refusal
17	3.6	6.6	3.0	Hard pack Sand, Refusal
18	+2.3	+2.3	0.0	Exposed outcrop
19	16.2	16.2	0.0	
20	+0.8	+0.8	0.0	Exposed ledge
21				VOID
22	17.6	17.6	0.0	
23	5.8	12.3	6.5	Hard pack Sand, Refusal
24	9.4	11.8	2.4	Hard pack Sand, Gravel, Refusal
25	3.9	3.9	0.0	Rock
26	5.4	5.4	0.0	Scattered Rocks
27	8.7	8.7	0.0	"
28	9.6	14.1	4.5	Hard pack Sand, Refusal
29	2.7	7.0	4.3	" " " "
30	7.5	7.5	0.0	Scattered Rocks, Refusal



DESIRED IMPROVEMENT RECOMMENDED

STONE JETTIES

ENTRANCE CHANNEL 8-FEET DEEP

N145,000

N144,000

R-4 GONG

C-5

C-7

ROCKS

SUNK

INNER

NOTES:

Soundings and probings are in feet and tenths and N143,000 are referred to the plane of Mean Low Water.

Hydrography from survey of July 1957 by John Rock.

Topography from this and previous surveys.

B.M. 1. A standard triangulation station disk, stamped "Entrance" located about center of most westerly one of group of 3 rocks known as White Rocks. These rocks are on the south side of channel at entrance to Hampton River. B.M. is located about 130 yards west of black beacon. Elev. 16.58' above M.L.W.

Coordinates are on the Mercator Grid System for the State of New Hampshire.

Probings shown thus: ⊕ P-4

Field books: R&H. 1428-1429 & 1431.

U.S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS, WALTHAM, MASS.

HAMPTON HARBOR, N.H.

SURVEY MAP

1 SHEET

SCALE IN FEET

200 0 200 400 600

OCT. 1962

APPROVED:
CHIEF, ENGINEERING DIVISION

SUBMITTED:
CHIEF, PLANNING AND REPORTS BRANCH

CHIEF, RIVER AND HARBOR SECTION

PROJECT ENGINEER

DIV ENGR DC
FD ENGR DC
CH ENGR C

TO ACCOMPANY DETAILED PROJECT REPORT DATED: JULY 30, 1963

FILE NO. 1550 D-4-4

PLATE NO. 2

HAMPTON HARBOR, NEW HAMPSHIRE
APPENDIX A
U. S. FISH AND WILDLIFE SERVICE REPORTS

1. The U. S. Fish and Wildlife Service was requested by letter of 22 September 1958 to comment on the effect of the proposed improvement on fish and wildlife. The improvement described consisted of extending the north jetty, raising the outer end of the south jetty and dredging the entrance bar channel 8 feet deep. The dredged spoil was to be placed on the adjacent beach or nearby marsh areas depending on the particular need at the time of construction. The report on this matter consists of a letter dated 10 November 1958 and a letter dated 19 November 1958, printed in full in this appendix.

2. The opinion of the U. S. Fish and Wildlife Service was requested by letter of 25 May 1960 on the fishing benefits evaluated for the improvement and the availability of the resource to support an increase in the fish catch. The report on this matter, dated 8 July 1960 is printed in full in this appendix.

3. The U. S. Fish and Wildlife Service was requested by letter of 7 March 1963 to analyze the sport fishery benefits that could accrue from the proposed jetty extensions. Their report dated 24 April 1963 is printed in full in this appendix.

REGION 5

NEW ENGLAND STATES
NEW YORK
PENNSYLVANIA
NEW JERSEY
DELAWARE
WEST VIRGINIA

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
OFFICE OF REGIONAL DIRECTOR
BLAKE BUILDING
BOSTON 11, MASSACHUSETTS

IN REPLY REFER TC:

November 10, 1958

Division Engineer
New England Division
U.S. Corps of Engineers
424 Trapelo Road
Waltham, Mass.

Dear Sir:

Reference is made to Lt. Col. Seifert's letter of 22 September requesting our comments as to the probable effects of navigation improvement in Hampton Harbor, New Hampshire on fish and wildlife. The following comments represent a consolidation of the views of this office and those of the Bureau of Commercial Fisheries at Gloucester, Massachusetts.

Hampton Harbor is not at present very important as a clam-producing area, but if the town or state should take sufficient interest to undertake rehabilitation measures, it is entirely possible that the resource could be restored to its former productivity. Construction and dredging outside the harbor entrance should have little or no effect upon the clam-producing areas, which are mainly within the harbor and the Hampton River. No harmful effects upon the clam resource are anticipated from dredging work within the harbor unless the dredged material is dumped on the open mud flats.

The Hampton-Seabrook coastal marshes which lie adjacent to Hampton Harbor and along the Hampton River total 4,100 acres and rate highly from the wildlife and waterfowl standpoint. This block of coastal marsh has received considerable attention in the deliberations of the Atlantic Flyway Council, an organization of the 17 states in the Atlantic Flyway which advises the U.S. Fish and Wildlife Service on waterfowl management matters. These deliberations, which are still continuing, concern the place of this unit in an overall, integrated system of waterfowl habitat management along the entire Flyway. While we do not anticipate damage to waterfowl and wetlands values from the dredging work itself, disposal of the dredged spoil is viewed with concern.

The Hampton-Seabrook marshes have already suffered from encroachment by boat clubs, summer cottage units, garbage dumps and commercial activities. Both we and the New Hampshire Fish and Game Department feel that the loss of even a relatively small amount of the remaining marsh habitat would be objectionable.

Therefore, we recommend that both the mud flats inside the harbor and the marshes not be used for spoil disposal but rather that dredged material be placed on the beach where it will possibly serve a useful purpose.

Thank you for giving us the opportunity to comment on this proposal.

Sincerely yours,

E. W. Bailey
Acting Regional Director

REGION 5

NEW ENGLAND STATES
NEW YORK
PENNSYLVANIA
NEW JERSEY
DELAWARE
WEST VIRGINIA

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
OFFICE OF REGIONAL DIRECTOR
BLAKE BUILDING
BOSTON 11, MASSACHUSETTS

IN REPLY REFER TO:

November 19, 1958

Division Engineer
New England Division
U.S. Corps of Engineers
424 Trapelo Road
Waltham 54, Massachusetts

Dear Sir:

This is in further reference to the proposed navigation project for Hampton Harbor, New Hampshire. This letter will supplement our earlier reply to your office on this subject dated November 10, 1958.

Our Bureau and the New Hampshire Fish and Game Department have no objections to the deposition of spoil material on Hampton Beach. However, we would not appreciate indiscriminate distribution of spoil material on the marshlands adjacent to Hampton Harbor for we have considerable interest in these marshlands because of their value as habitat for wildlife and nursery areas for fish.

We recognize your position in this matter, however, and we have selected a disposal area which we feel will be least damaging to our interests. If spoil must be deposited on the salt marshes, we would prefer that you utilize the area immediately east of the proposed local improvement and along the western section of the Hampton Beach development. Building expansion has encroached upon this portion of the marshes, a significant portion of which already has been lost to fish and wildlife interests.

We recommend that no spoil be placed on those marshes situated in the northern, western, and southern sections of Hampton Harbor.

We would appreciate being informed of the progress in planning for this project and would also appreciate being advised concerning the possibility of utilizing the area immediately east of the proposed improvement as a spoil-disposal site.

Sincerely yours,

A-4

E. W. Bailey
Acting Regional Director

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

JUL 8 1960

Division Engineer
New England Division
U. S. Corps of Engineers
424 Trapelo Road
Waltham 54, Massachusetts

Dear Sir:

In regard to Colonel Eklund's letter of May 25 on the fishery benefits in connection with your navigation survey study on Hampton Harbor, New Hampshire, the Service submits the following report.

In Colonel Eklund's letter, paragraph "a. Existing Fleet", considering the additional fishing time which will be available to the fleet; and paragraph "c. Transferred Boats", considering the time saved in travel which could be used as fishing time, are apparently calculated on a fairly sound basis. Paragraph "b. New Boats", however, indicates a 10 percent increase in catch, resulting from the use of 3 new boats. Since we have previously maintained the viewpoint that not over a 5 percent increase can be expected from increased fishing on present grounds, we would prefer to make our estimates as follows:

Present fishing grounds

Increased fishing time resulting from elimination of tidal delays for the existing fleet of 14 full-time and 27 part-time boats; addition of 3 new boats (2 full-time and 1 part-time); and transfer of 2 full-time boats from Portsmouth to Hampton Harbor would result in a 5 percent increase in annual catch. This would amount to 8,500 pounds of lobsters, valued (at $0.40 per pound) at $3,400.

New, presently unfished grounds

Additional, virtually unfished, areas are available both immediately outside the present 15-mile range of fishing, and on Jeffrey's Ledge at a considerable distance from port. It is not considered economically feasible to fish these grounds at present, but since the average real value of lobsters over the next 50 years may be expected to double, the exploitation of these grounds can be expected. A 10 percent increase in the annual catch is estimated as a result. This would amount to 17,000 pounds, valued at $6,800.

The average dockside values of increased landings due to the project will be $10,000 annually over a 50 year period.

These estimated poundages and dockside values compare very closely with those indicated in Colonel Eklund's letter but present the gross benefits rather than the net benefits.

As we have indicated previously, the calculations on which the net figures were obtained appear to be on a fairly sound basis.

In summary, it is our opinion that the project will result in the amount of fishery benefits claimed and that the resources are adequate to support the estimated increase in catch.

Sincerely yours,

John S. Gottschalk
Regional Director
Bureau of Sport Fisheries
and Wildlife

Russell T. Norris
Acting Regional Director
Bureau of Commercial Fisheries

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
3 Pleasant Street
Concord, New Hampshire

April 24, 1963

Division Engineer
New England Division
U. S. Army Corps of Engineers
424 Trapelo Road
Waltham 54, Massachusetts

Dear Sir:

Mr. Leslie's letter of March 7, 1963, asks for our analysis of sport fishery benefits which may accrue from jetty repair and extension under proposed Hampton Harbor, New Hampshire, navigation improvements. This letter will assist you in your planning. It was prepared under authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), in cooperation with the New Hampshire Fish and Game Department. The information and conclusions are preliminary and subject to review by higher authority in the Service.

Our studies indicate that significant benefits would accrue to the sport fishery through repair and extension of the existing State jetties. Present fisherman use of the existing jetties is limited, due primarily to the present state of disrepair of the jetties. It is estimated that the average annual fisherman use of repaired and extended jetties would amount to 16,424 fishermen days. (A fisherman-day averages 4 hours per fishing trip.) At a conservative figure of $1.50 per fisherman day the average annual fishery benefits would amount to $24,600 during the project life. The estimated present fisherman use of the existing north jetty is 500, primarily during non-swimming seasons of the year. The annual net fishery benefits, therefore, are estimated to be $24,000 with repair and extension of the jetties. The State Division of Parks prohibits access to any part of the north jetty because of potential safety hazards related to the condition of the jetty. Sport fishery benefits would be increased by modification of the jetties to hold the top elevation to within a 6-inch vertical variation and to chink gaps in the top surface to provide a safe walking surface. A 3-foot high, double guard rail mounted the length of the jetties would provide a desirable safety factor for fishermen. There is some indication that the Division of Parks would consider permitting fisherman access to the jetty if reasonable safety factors are included in structure design.

It is estimated that parking facilities would be required for 72 vehicles during peak-day use. A single parking area would be adequate for fisherman use of both jetties. The State Park abutting the north jetty provides parking on a vehicle-fee basis during the swimming season. There is some indication that the Division of Parks would consider fisherman parking in a portion of the State Park area in the "off-season"; a meeting has been suggested to permit further discussion of this.

In summary, we estimate that average annual net sport fishery benefits for the 50-year project life would be $24,000 provided that design modifications include a safe walking surface and guard rail, and that reasonable access and parking are provided. Further negotiation with the Division of Parks is considered necessary to resolve the matters of year-'round access to the north jetty and parking area.

Sincerely,

Carl F Nelson

Carl F. Nelson
Supervisor
Concord Area Office

Branch of River
Basin Studies

cc: BRBS, RO
NHF&G, Attn: H. Siegler
NH State Parks Div., Attn: H. Berry

HAMPTON HARBOR, NEW HAMPSHIRE

APPENDIX B

COMMENTS OF LOCAL INTERESTS

1. The study of Hampton Harbor was substantially complete and the general conclusions apparent by June 1958. By letter of 11 July 1958 the New Hampshire Port Authority was requested to comment on local attitude toward the plan of improvement and the indicated requirements of local cooperation. The Port Authority held a public hearing in Hampton 9 October 1958, at which time the plan was approved and a committee appointed to determine an acquitable allocation of local costs between the State and the Towns bordering the harbor. The Town of Hampton passed a resolution in favor of the improvement 10 March 1959. This appendix contains a letter of the New Hampshire Port Authority dated 30 September 1959 and a letter to the Port Authority from the Selectmen of Hampton dated 25 September 1959, which indicate local approval of the project. No definite statement could then be made on the local cash contribution although it was expected that this matter would be resolved in a short time.

2. The improvement was discussed at a local meeting on 15 November 1961, when it was reported that local interests had taken no action to determine how the local cash contribution was to be shared by local interests. Local comments were again requested by letter 21 November 1961 to the Town of Hampton and the New Hampshire Port Authority. Their replies of 29 November 1961 and 20 April 1962 are included in this appendix. It was understood at that time that a bill would be entered in the 1963 session of the State Legislature to appropriate $100,000 for the cash contribution. This, with funds appropriated by the Town of Hampton, would meet that particular requirement. (See Paragraph 4 hereafter for later developments).

3. By letter of 19 June 1962 the New Hampshire Port Authority was requested to comment on whether local interests would assume all costs over a $200,000 Federal limit. Their reply dated 28 November 1962, stated that the Town of Hampton had voted to appropriate the sum of $20,000 as their share of the project. The letter also indicated that anticipated State legislation in 1963 would provide funds from the State of New Hampshire for the remaining share of local contribution. A copy of the reply is shown on Page B-7.

4. A State Act authorizing local cooperation was approved July 5, 1963 to be effective September 3, 1963. Chapter 216B of the State Laws provides that ..."The Governor with the advice of the council is hereby authorized and empowered to undertake in cooperation with the Corps of Engineers, United States Army, a project to improve navigation in the entrance to Hampton Harbor... "The Governor and council are hereby authorized to cooperate with and enter into agreements with the federal government, or any agency thereof, as they may deem advisable to secure federal funds for the purposes hereof, and further to render such assurance to the federal government on behalf of the state as the federal government may require, including but not limited to, an assurance that the State of New Hampshire will hold and save the United States free from all claims for damages that may arise before, during or after prosecution of the work"... Prior to drafting this act State and local interests were made aware of all the probable requirements of local cooperation.

TOWN OFFICES

HAMPTON, NEW HAMPSHIRE

September 25, 1959

Alvin F. Redden, Secretary
New Hampshire State Port Authority
County Court House
Portsmouth, New Hampshire

Dear Mr. Redden:

This is with reference to the local requirements considered by the New England Division, Corps of Engineers for improvements to Hampton Harbor as stated at the hearing held by the New Hampshire State Port Authority at Hampton Beach, October 9, 1958.

The proposals and recommendations presended received the endoresement of the forty odd representative citizens present and further endorsement was given by vote of the Hampton Town Meeting, March 10, 1959. Without question requirements a, b, and c will be met.

Included in other requirements were the providing and maintaining two public landings and a local cash contribution of $120,000.

It was stated that these requirements would not need to be met until after Congress authorizes a project and appropriates funds for construction but reasonable assurance that the requirements will be met was necessary.

There are two State piers, one with a float on the Hampton side near the highway bridge and one on the Seabrook side. There is another landing maintained for public use. There is also a boat club with launching ramp.

The Town of Hampton, this year, granted as appropriation of $25,000 for the use of the Hampton Marsh Reclamation Authority recently established by the State Legislature.

There is assurance of continued grants by the Town to this Authority for development purposes.

An $85,000 marina is now under construction on the Hampton side of the Harbor. This will be complete in every detail.

We believe these and other developments which are bound to follow are assurance that the full requirements will be met when necessary.

We request that you include this presentation with your report to the New England Division Engineer.

Very truly yours,
BOARD OF SELECTMEN

Donald A Ramey
Chairman

B-3 Harry L. Kennedy

David F Cook

NEW HAMPSHIRE STATE PORT AUTHORITY

COUNTY COURT HOUSE, PORTSM[illegible] H.N.H.

Refer to File No. NHDGW September 30, 1959

Brigadier General Alden K. Sibley
New England Division Engineer
Corps of Engineers, U. S. Army
424 Trapelo Road
Waltham 54, Massachusetts

Dear General Sibley:

The New Hampshire State Port Authority has directed me to submit the following comments on the proposed improvements to navigation at Hampton Harbor and Rye Harbor. This is in accordance with your letters of July 11, 1958 and September 22, 1959.

We have already submitted to you copies of the records of hearings held by this Authority at Hampton, October 9, 1958 and at Rye, November 17, 1958.

The Port Authority has endorsed the proposed improvements as suitable and economically sound and believe the indicated requirements of local cooperation will be met.

As evidence of this we are enclosing:

1. - Two copies of a supporting statement on Hampton Harbor submitted by the Board of Selectmen of Hampton.
2. - Two copies each of Acts passed by the Town of Rye and the State which provide for the local cooperation on Rye Harbor.

We believe these to be sufficient evidence to enable you to submit a favorable report. Should further information be necessary please advise.

We regret very much the unavoidable delay.

Very truly yours,

Alvin F. Redden

Alvin F. Redden, Secretary
New Hampshire State Port Authority

AFR/ess
Enclosures

TOWN OFFICES

HAMPTON, NEW HAMPSHIRE

KENNETH D. BOEHNER
TOWN MANAGER

November 29, 1961

Colonel Otto J. Rohde
Corps of Engineers
Deputy Division Engineer
U. S. Army Engineer Division, New England
424 Trapelo Road
Waltham 54, Massachusetts

Ref: File #NEDGW

Dear Colonel Rohde:

This is to acknowledge receipt of your letter dated November 21, 1961.

Action is now being taken on how to raise $110,000 for the local contribution towards this project.

Request for assistance is being made to the State. Also, it is expected that requests for funds will be made at the March, 1962 Town Meeting.

Very truly yours,
BOARD OF SELECTMEN

By: Kenneth D. Boehner
Kenneth D. Boehner,
Town Manager.

B/s

NEW HAMPSHIRE STATE PORT AUTHORITY

COUNTY COURT HOUSE, PORTSMOUTH, N. H. TELEPHONE 436 - 8500

HUGH G. HAMILTON, CHAIRMAN EUGENE P. SOLES, VICE CHAIRMAN CECIL CHARLES HUMPHREYS, SECRETARY ALLAN V EVANS JOHN E. SEYBOLT ROBERT E. WHALEN CARL M LOUGEE

April 20, 1962

Division Engineer
U. S. Army Engineer Division
New England
424 Trapelo Rd.
Waltham 54, Mass.

Dear Sir:

Reference is made to your letter, File No. NEDGW, dated 21 November 1961, concerning a meeting between representatives of your division, the Town of Hampton, New Hampshire and members of the New Hampshire State Port Authority, in connection with Beach Erosion Control at Hampton Beach and Channel and Harbor Improvements in Hampton Harbor.

The reference letter requested comment on the present local attitude toward a cash contribution for the improvements which were then discussed. Reply has been delayed until action could be taken at its annual town meeting in March of the current year.

It has been reported that the town has voted $20,000 toward the harbor improvement and construction of one groin as part of the erosion control project. Another article in the warrant for the annual town meeting would have appropriated an additional $20,000 for the construction of a public pier. The latter article was defeated on the basis of two public piers which are now in use on both sides of Hampton Harbor.

It is hoped that, although the request for a third public landing in Hampton Harbor has been defeated, the cash contribution of $20,000, plus funds that will be requested from the State, will at least allow the Corps of Engineers to embark upon preliminary steps in the project.

Very truly yours,

NEW HAMPSHIRE STATE PORT AUTHORITY

JFR:b

John F. Rowe

NEW HAMPSHIRE STATE PORT AUTHORITY
211 STATE ST., PORTSMOUTH, N. H. ····· TELEPHONE 436 - 8500

28 November 1962

Division Engineer
New England
Corps of Engineers
424 Trapelo Road
Waltham 54, Massachusetts

Dear Sir:

In reply to your letter of 19 June 1962, which requested the Port Authority to furnish a statement of requirements of local cooperation for the federal navigation project at Hampton Harbor, you are advised that the Town of Hampton, on 13 March 1962, voted to appropriate the sum of $20,000 as the contribution of the Town of Hampton to this project. These funds are now available. Included in the vote of the Town of Hampton was the stipulation that a portion of this sum should be applied as the town's share toward the building of the proposed groin at Church Street at Hampton Beach.

It is anticipated that legislation will be introduced in the next session of the legislature, which convenes in January 1963, and contingent upon its successful passage, it is assumed that such legislation will provide funds from the State of New Hampshire for the remaining share of local contribution.

When the legislation has been enacted, the remaining required assurances will be furnished to the Corps of Engineers.

Very truly yours,

EUGENE P. SOLES
Chairman

EPS:b

NEW HAMPSHIRE STATE PORT AUTHORITY
211 STATE ST., PORTSMOUTH, N. H. ····· TELEPHONE 436 - 8500

February 4, 1964

EUGENE P. SOLES
CHAIRMAN

Brigadier General P. C. Hyzer
Division Engineer
New England Division
U. S. Army Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts

Dear General Hyzer:

Reference is made to your letter, File No. NEDED-R, dated 9 January 1964, which requested the Port Authority to comment on the suitability of the proposed Federal navigation project for Hampton Harbor and to furnish a statement on the ability and willingness of local interests to meet the requirements of local cooperation.

The Port Authority endorses the proposed improvement project as suitable and considers the plan of improvement would meet the needs and desires of local interests for the area concerned. The State of New Hampshire understands the requirements of local cooperation and can provide assurances that these requirements would be met when requested. As evidence of this, the following local action has already been taken:

(1) State legislation in 1963 resulted in Chapter 333 of the Laws of 1963 entitled "An act relative to the improvement of Hampton Harbor entrance and the restoration of sand lost by erosion on State-owned land at Hampton Beach", a copy of which is on file in your office. This act authorizes a bond issue to provide funds in the amount of $350,000 for local participation of up to 50 percent of the construction cost of the proposed harbor project and for assuming the full cost of the proposed Hampton Beach sand renourishment project (including construction of a groin), with the understanding that the Federal Government would reimburse the State for the latter project in the amount of 50 percent when Federal funds are appropriated for this purpose, or a larger percentage that may become available due to a change in Federal laws.

(2) The Town of Hampton on 13 March 1962 voted to appropriate the sum of $20,000 toward the local share of the beach groin and sand replenishment program.

Inasmuch as your letter indicates a current local cash contribution of 41 percent ($133,000) of the harbor project cost, and the total cost of the beach nourishment project is estimated to be $218,000, of which the Federal Government will participate to the extent of $109,000 and the Town of

Hampton $20,000, the authorized $350,000 bond issue appears sufficient to comply with the requirements for a cash contribution.

It is understood that the cost limitation for the Corps of Engineers on the Hampton Harbor project is $200,000 and that it would be the responsibility of local interests to assume all project costs in excess of the statutory limit of $200,000, should the actual costs at the time of construction so warrant.

It is anticipated that the requirement for maintaining 22 acres of anchorage and access channels 6 feet deep in the harbor can be complied with when beach fill for the Hampton Beach sand replenishment program is required. Also, the other requirements of local cooperation are understood and can be met when requested.

Therefore, the Port Authority approves of the proposed navigation project, and considers local interests to be financially capable and willing to provide formal assurances that the requirement of local cooperation will be met.

Very truly yours,

Eugene P. Soles

EUGENE P. SOLES
Chairman

EPS:b